

## Science of East and West

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### ABSTRACT

As a physician who attended a scientific high school, trained originally as a chemist in college, and who later became entranced with Chinese medicine, studying the ongoing cultural struggle between “evidence-based medicine” (the validity of which is built on a statistical-mathematical, deductive-digital-linear model) and an inductive logic experience-based medicine, is compelling. What follows is an attempt to describe these models and delineate them in terms of their underlying structure, perspective, and application.

**Key Words:** Allopathic, Statistical Significance, Deductive Logic, Chinese Medicine, Experience

### INTRODUCTION

#### The Chinese and Biomedical Models and Scientific Research

A model of reality is a map, not the terrain as illustrated by the now well-known metaphor of Einstein and cosmic clock. I hope to demonstrate how biomedicine and Chinese Medicine (CM) have different models of reality and that each stands on its own and cannot be evaluated by the logic, standards, and research modality of the other. As someone once observed, Chinese medicine is round and biomedicine is square. The purpose of this article is to illuminate this arcane wisdom.

**Reductionism.** It is natural for one culture to reduce the logic and concepts of another culture into its own. Reductionism is as old as human history. In this instance is the attempt in the West to reduce the analogue inductive Chinese model into the digital deductive system of logic, characteristic of biomedicine with recent cooperation of Chinese medical practitioners. Certainly, there are endless relationships between the 2 approaches, but energy concepts cannot be reduced to Western physiology.

For example, acupuncture needles stimulate the endorphin and enkephalin systems; therefore, some biomedical scientists try to reduce the concept of the Qi to endocri-

nology. Others have found that acupuncture needles stimulate the autonomic nervous system, so they postulate that all of energy concepts can be reduced to the physiology and pathology of the autonomic nervous system.

This is digital deductive thinking which, in its experimental mode, requires the elimination of all but one variable, which is the antithesis of CM. It flourishes in the simultaneous relationships of many variables which we call solid-hollow (Zang-Fu) patterns, Qi, blood, and body fluids, and pathogenic factors including toxicity and combinations that we call conditions (neoplasms), and finally, the individual.

This move toward a Western model is predicated on the ubiquitous belief that Western medicine and science are “real” and that CM is a “meta-medicine.” Therefore, CM often must prove itself according to Western medical research standards of standard deviation, statistical significance, and double-blind studies, and resemble the biomedical model in all its formal structure to be literally and genuinely “real.” However, the truth may lie elsewhere.

### LOGIC

#### Introduction

Logic is an arcane subject to which complexity this discussion makes no pretense of mastering. Two kinds of logic

will be addressed—analogue logic and digital logic—as they apply to the Chinese and allopathic (biomedical) medical models.

I am indebted to Manfred Porkert who wrote of logic in terms of “essential” and “accidental” criteria, of which he considers the “essential criteria” to be identical to the analogue, inductive logic of CM, and more accurate than the “accidental criteria,” characteristic of the digital deductive logic of modern science and biomedicine.<sup>1</sup>

### **Analogue Inductive Logic and Chinese Medicine Mode**

Inductive logic is defined as reasoning from particular facts or individual cases to a general conclusion. Inductive logic arrives at theory at the end of the process. Chinese Medicine reasons from these “particular facts and individual cases” in accordance with the definition of inductive logic, and with the definition of an inductive science in “observing, massing, and severely testing, coordinating, and systematizing the laws of nature” over a long period of time. Again, the theory follows the experience.

Chinese Medicine observes what “works,” and over centuries, keeps what works and discards what does not work. Multiple methods, concepts, and practices from different medical eras are used simultaneously. This is the epistemology of CM: science in its original and most creative form.

**Circular in Nature.** With the analogue process, reliability is inverse to homogeneity. Porkert wrote that the analogue process is one in which reliability is inverse to homogeneity and materiality (“material” tends to be more stable over time than the energetic).<sup>1</sup> As examples, he gives in decreasing order of stability and duration of function galaxies, planetary systems, cultural systems, political systems, social systems, and individuals.

This characteristic lends itself to the circular rather than linear view of reality congruous with the Chinese systemization of reality incorporated in the Shen-Ko-Insulting cycles. In a circle-cycle, one can establish relationships easily between one item and another, across and around the circle.

Furthermore, the analogue CM model and clinical practice operate on the thesis that many events (variables such as “agent and effect”) occur simultaneously in any one individual, at any one time and over time. This includes their unique, often complicated, inner environment as well as external pathogenic factors.

The Chinese analogue method operates best in practice in the real world where these many diverse events and influences are occurring simultaneously, and where the significant factor in diagnosis and management is relationship. This is especially true for chronic conditions. The chronic disease process involves multiple etiologies including constitution, diet, environment, emotional stress, drugs and medication, trauma and external pathogenic factors, and equally complicated multiple consequences.

**Terminology and Measurement.** With the analogue CM model, the terms are unequivocally and extremely precise: Yin-Yang, Five Elements (Phase), etc., but the measure is inexact, depending on approximations from sensory diagnostic methodologies such as the pulse, tongue, and color as well as symptoms.

**Systemization of Data.** A stringent rational systemization of empirical data is expressed by the Yin-Yang and Five Phase Systems, Eight Principle, Six Divisions and Four Levels, solid-hollow (Zang-Fu) organs, Channel Systems, Triple Burner System, Eight Trigrams, and Stems and Branches (among others).

**Diagnosis.** We observe the pulse, tongue, eyes, and color; we palpate, look, ask, and listen, and integrate the findings. All are simultaneously necessary in order to accomplish this.

We acquire information called “symptoms,” searching for those closest to the person’s innermost being. We translate those symptoms to CM conditions and organize them according to organs, substances, pathogenic factors (external and internal), integrating them with signs, pulse, tongue, color, eyes, palpation, and others.

Chinese Medicine simultaneously examines the interaction of the terrain (body condition of the patient) with stresses in his/her life, emotions, toxic exposure, eating, sleeping, and sexual habits as well as external pathogenic factors (viruses, parasites, etc.) as examples. When we find a confluence of all these findings that resemble a “pattern,” we have a diagnosis. Isolating and studying only one factor would lead to an incomplete diagnostic picture.

In studying the cause of multiple sclerosis, for example we would have to study all the variables, the stresses already mentioned (symptoms and signs of viruses, environmental toxins, diet, emotional factors, etc.) and their interaction with the terrain, the body condition, and all of its CM conditions; such as Liver Qi-Yang deficiency, Separation of Yin and Yang of the Spleen, and Kidney Essence deficiency. We would integrate these into an inclusive pattern or general formulation leading to management as described under “methodology.”

Multiple sclerosis would be a consequence of the simultaneous interaction of all these influences in one person at the same time, necessarily operating in the analogue inductive mode. Inferences for the larger population would then be a matter of enlarging the scale of observation.

**Management.** Management is a function of the relationship between stress and terrain. This includes management of immediate, root, secondary, and derivative issues in various combinations depending on the degree and chronicity of the stress. The modalities are acupuncture, herbs, nutrition, exercise, heat, and massage among others. If the stress is overwhelming, it might take precedence in the

'immediate' intervention whereas if the stress is chronic, we may already be able to address the terrain, the immediate, root, secondary, and derivative issues simultaneously.

### Digital and Deductive Logic and Biomedicine

This is reasoning from a known principle or observed fact to an unknown; from the general to the specific; or from a premise to a logical conclusion. It operates best with linear thinking. In contrast to inductive logic, we begin with a theory to explain an effect and test the theory which, being an on-off system, works with only one variable at a time.

The biomedical model operates best with deductive, digital thinking, which is easily measurable in linear (metric) terms, with few or no diverse events and where reliability depends on the homogeneity of data. All relations of observed effect to other simultaneous effects are consciously suppressed or severed, i.e., there are no variables. This also requires a homogeneity of substances that permits a high degree of probability.

The following critique of the digital, deductive logic of biomedicine in no way minimizes the experimental method in science, and only questions its value in medicine that deals with human beings—too complex to allow for the simultaneous elimination of all variables necessary to the scientific mode.

**Linear in Nature.** In a linear relationship, one can only go from that which is immediately ahead or behind. Skipping ahead or behind is difficult and unreliable; relationships are difficult to study or establish. Likewise, in studying the cause of multiple sclerosis, we could not skip laterally to another etiology from the one we originally chose to study since the methodology depends on having only one theory at a time and following only that line to its conclusion.

**Terminology and Measurement.** The digital biomedical model is easily measurable in linear (metric) terms by machines with few or no varied events. This permits a high degree of predictability and accurate study, as with oxygen atoms that are all alike and in small particle science where the measure is metric and time is in milliseconds.

In its attempt to qualify as a "hard science," biomedicine attempts to eliminate diversity and approach the homogeneity of oxygen molecules by eliminating its study of all variables (such as in its study of multiple sclerosis). With deductive logic, the presence of more than one variable invalidates the validity of the findings. In living creatures, this is the antithesis of the reality of their complexity and heterogeneity.

**Systemization of Data.** The digital deductive analysis is mostly mathematical and statistical. Biomedicine operates with deductive logic that confirms by statistical experiment and discards when the experimental information fails clinically. New knowledge supplants and does not incorporate old knowledge.

Statistical significance and standard deviation are the modus vivendi and operandi of biomedical research. They are our modern mythology; our new faith is "probability." In statistics, a result is called statistically significant if it is unlikely to have occurred by chance.

This represents the most catastrophic event in scientific and particularly medical history in terms of the amount of knowledge that has been discarded in the past 100 years because it might have happened by chance. (This was the message afforded to my medical class in 1949 in a lecture by someone they referred to as the founder of modern statistics.) We can learn the efficacy of knowledge by testing it over time rather than discarding it because it might have happened by chance.

Use of the statistical significance test has been called seriously flawed and unscientific.<sup>2</sup> Some authors note that "insignificance" does not mean unimportant and propose that the scientific community should abandon use of the test altogether, as it can cause false hypotheses to be accepted and true hypotheses to be rejected.

Yet another common pitfall happens when a researcher writes the qualified statement, "we found no statistically significant difference," which is then misquoted by others as "they found that there was no difference." Actually, statistics cannot be used to prove that there is exactly zero difference between two populations. Failing to find evidence that there is a difference does not constitute evidence that there is no difference. This principle is sometimes described by the maxim "absence of evidence is not evidence of absence."<sup>3</sup>

**Diagnosis.** Tools are all mechanical (endoscopy), electromagnetic (CT scan), or chemical (complete blood count). Direct observation using the senses, except for minimal asking, looking, listening—the essence of CM diagnostic science—may be close to nonexistent.

The findings from the above tools are collated and correlated according to a body of accumulated clinical and largely experimental information into a probable diagnosis involving a single pathogen.

Another cornerstone of biomedical research is the double-blind controlled study in which half of the subjects are given the investigated substance or procedure and half, the control group, are not.

A double-blind study of living creatures, no two of which are alike, cannot meet the requirements of homogeneity necessary to making statistical significance and standard deviation a valid experimental modality. The inevitable side effects of medications compared with the lack of such in the control group easily identifies to the participants which medication is and which is not being tested. There is nothing "blind" in this.

Another concern in the quest of CM practitioners to be accepted by mainline medicine is the "protocol" mentioned above. Vast funds have been allocated to test the worth of

acupuncture through grants for experiments (one in which I was asked to participate, typical of the others). It was a test of the value of acupuncture in the treatment of asthma. There was the control group in whom needles were inserted in points considered not relevant to the treatment of asthma, patients treated by other modalities, and patients who were treated with a single acupuncture protocol. I refused to participate. The results were abysmal. (One acupuncturist who did participate reported that he then privately treated the same patient with whom the protocol failed. He used standard Chinese diagnostic examinations and a more individually focused treatment that succeeded.)

**Management.** At the risk of loss of hospital privileges or even one's license, management is in accordance with official protocols that leave little innovation by the individual physician. These protocols change frequently in accordance with the latest experimental data that often contradict the previous experiment.

### Realms of Reality

Chinese Medicine examines reality through the model in which "energy" and mass are interchangeable at a sub-molecular level of physiology. (The term "energy" is being used here with the understanding that Qi and energy are not interchangeable. Energy is being used for convenience, being easily recognizable.) When "energy" circulation decreases sufficiently, due either to excess or deficiency, stagnation ensues and there is mass (tumors) (discharge). This ability to access the "energetic" aspect of reality allows us to perceive the disease course at a very early stage, to explore its constitutional and life source (style and fate), and thereby prevent, halt, or ameliorate the process. Even with the advent of genetic science, the biomedical model continues to operate within the realm of gross pathology, visual to the naked eye or microscope (histology), and accesses the spectrum of the process from birth to death much closer to death.

### Professional Consequences

Human beings have a limited array of symptoms; this is why diagnosis is so necessary and so challenging. For this reason, any syndrome of symptoms can have many causes (stress), while each person has endlessly different strengths and weaknesses (terrain). Hence, each person in a statistical or double-blind study is vastly different from each other and the research of questionable value.

Chinese Medicine practitioners, driven by the need to be accepted by biomedicine and to perhaps increase their earnings through that association, are abrogating their unique diagnostic and experimental (analogue) system in favor of biomedicine's digital diagnostic and experimental model. Surrendering of basic concepts and practices by CM practitioners to be accepted by the allopathic model, and without classical Chinese diagnostics, may lead the

practitioner of the culturally weaker medicine to become mere technicians within the predominant system, thus becoming more and more fragmented into the specialization that has so alienated the public. Threatened is CM's relevance to the health care system now and in the future, as well as that aspect that enhances our being: its inherent unifying harmony.

With the ubiquitous loss of these tools of CM diagnosis and the analogue inductive science on which they are based, the capacity of the CM practitioner to appreciate the innate complexity of individuals, and to perceive the earliest stages of patterns of disharmony and the process of disease, is sharply curtailed. Therefore, CM also has increasingly lost the ability to serve its highest purposes, beyond even the power to treat individuals rather than biomedical diseases, to prevent illness.

### Broader Consequences

My premise is that we possess a unique medicine based on the valuation of wholeness, and that these values must be reflected in the structure of the profession. And further, that it is our responsibility to take acupuncture (and herbal medicine) forward on its own ancient terms, modified to be relevant to "modern times," as opposed to modeling it on those adopted by the modern Chinese (TCM) or according to those related professional structures established by Western biomedicine.

The definition of "human" is being altered as we debate the gradual depersonalization of experience. This may be due to the recent sudden and massive transfer in our thinking and knowing—from a predominantly analogue intuitive process, and one that embraces chance and the gray areas of life—into a digital predictable entity. For the latter, all issues are black and white with an increasing intolerance of differences.

With the discovery of epigenes, the relevance of the entire range of life source (style and fate) to health and disease and to the behavior of genes, refutes the mechanistic answer to the mystery of life as simply an expression of chemical processes. All of the varied, simultaneous pulsating and unpredictable intricacies of life determine our fate, as understood by CM since its inception. Even in genetics, the digital, the predictable, has acceded to chance.

## DISCUSSION

A deductive digital statistical science characterizes biomedicine and is not qualified to confirm or deny the verifiability of a medicine whose model of scientific logic is as alien to it as the analogue inductive logic of CM science.

The mistake is in measuring the CM area of reality, characterized by low homogeneity and measured by the Yin-Yang polarity, with methods meant for the biomedical

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area of reality with high homogeneity measured by the metric system. The concept and reality of Qi is an unacceptable reality to biomedicine because it cannot be measured by and does not yield to the metric system.

As we move to areas of reality such as tissues, cells, and social issues that are less likely to be homogeneous, the probability and validity of the data with the digital model decrease dramatically because the variables are now enormous and uncontrollable. Chinese Medicine treats people as individuals; biomedicine treats disease. Since no two people are alike, the analogue system that embraces diversity is much closer to reality than the digital, and clinically, ultimately far more useful while being totally unsuitable to biomedical research that requires homogeneity.

One cannot isolate the single factor that makes for illness or for healing, that single magic bullet of etiology and cure with which biomedicine is preoccupied. People are a complex expression of the interaction of genetics, life experience, and lifestyle, and are best studied by a method that can address that complexity.

Furthermore, if an observation is not statistically significant, it simply means the recorded event might have happened by chance. It does not mean it is not true. The loss of valuable knowledge because it could have happened by chance is incalculable.

## CONCLUSIONS

For these reasons and because the system of logic and science of the 2 medicines are entirely different as outlined above—Chinese Medicine, in its uncontaminated form and built on variables, patterns, and individuality and tested by time—cannot be reduced to a digital, biomedical physiology and pathology, or submit to current biomedical statistical research (on which its acceptance appears to increasingly depend).

Chinese Medicine does not have to justify itself. It has grown because it *works*, which is its own justification that has organically attracted increasing numbers of people in the West. These are human beings, complex analogue and not digital—individuals whose souls crave an audience with a medicine that has the time to listen and the expertise to respond successfully to the early murmurings of their discontent.

## DISCLOSURE STATEMENT

No competing financial interests exist.

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